

DBOD.No.BP.BC.3/21.04.109/99 name=Reference&gt;

DBOD.No.BP.BC.3/21.04.109/99

February 8, 1999

All Scheduled Commercial Banks

Dear Sir,

**Framework on Analysis of Balance Sheets**

As you are aware, the analysis of the financial position of banks as disclosed in the balance sheets is not being done in a systematic manner with a view to evaluating the critical parameters of performance and initiating appropriate corrective measures. Peer group comparison of performance parameters is also not attempted to evaluate the operational efficiency, strengths and weaknesses in performance vis-D-vis competitors. Further, in the absence of uniformity among banks in using various financial and non-financial parameters, the results are not always objective. It has, therefore, been decided that a uniform framework should be devised to enable banks to undertake focussed scrutiny of the balance sheets to identify/analyse the key measures of returns and risks, assumed by banks and to demonstrate the relationship of returns and risks.

2. We enclose a format in which the balance sheet analysis has to be undertaken. The suggested framework is broadly divided into two parts - Part-I identifies the inputs and Part-II indicates the various ratios, amounts, etc. which require detailed interpretation. The inputs and outputs are broadly classified on CAMEL basis. An attempt has also been made to measure the liquidity and interest rate risks assumed by banks.

3. Banks are, therefore, advised to analyse the balance sheets immediately on finalisation of their annual accounts as per the suggested framework and submit a memorandum to their Board of Directors. The copy of the note put up to the Board together with the analysis (in floppies), may be submitted to the OSMOS Division, Reserve Bank of India, Department of Banking Supervision, Central Office, Centre-1, World Trade Centre, Cuffe Parade, Mumbai-400 005, on a regular basis.

4. The mismatches in cash flows and interest rates may, however, be analysed from March 31, 2000, by which time the Asset-Liability Management System would have stabilised.

5. Please acknowledge receipt.

Yours faithfully,

Sd/-

**C R. Muralidharan**  
General Manager

Slip II/3

[Vol. II -BP.BC.No.3 of 1999]

Sr. No.	The return/statement to be submitted	Periodicity	Chapter in Vol. I in which a reference has been made to the return/statement	Office to which a return/statement is required to be submitted	Time limit for submission	Remarks	Page No.
1	2	3	4	5	6	7	8
31A	Analysis of Balance Sheet	Annual (31 <sup>st</sup> March)	7.12	Central Office of DBS, OSMOS Division.	Within one month from the date of finalisation of Balance Sheet	A copy of the Board Note together with analysis (in floppies) should be submitted.	After page No. 73

Slip II/4

[Vol.II – BP.BC. No.3 of 1999]

Format

## **Significance and Interpretation of important Financial Parameters suggested in the Framework**

Performance of banks affects the earnings (Net Interest Income and Net Interest Margin) and the economic value (Market Value of Equity) and their ability to be funded in the deposit and inter-bank market. The primary purpose of the suggested parameters is to identify/analyse the key measures of returns and risks (especially credit risk and market risks), assumed by the banks and to demonstrate the relationship of these returns and risks.

The significance and interpretations of some of the important parameters, suggested in the framework are given below.

### **A. Capital Funds**

#### **1. Risk Weighted Assets (RWA)**

Any disproportionate increase in RWAs vis-D-vis the growth of total assets signifies the bank's appetite for assuming more risks for maximising returns. Such disproportionate growth may also be a conscious policy of the bank management to change the flow of its resources from investments in Govt. stocks to loan book in a booming credit market for realising credit spread. A critical analysis of the composition of risk weighted assets is called for.

#### **2. Adjusted Capital to Risk-Weighted Assets (Net of Net NPAs) Ratio (ACRAR)**

The ratio reckons the unimpaired capital (Net of Net NPAs) available within the bank to mitigate potential adverse impacts of credit, market and operational risks. If the ratio is lower than the prudential level of 8%, the cushion available for absorbing future loss is limited.

### **B. Asset Quality**

#### **3. NPAs guaranteed by Government (Classified as standard assets)**

The NPAs, guaranteed by State/Central Government are treated as standard assets and no prudential provision as of now is made even though most of such advances ceased to generate any income to the banks. The exposures of the banks to such assets need to be analysed to gauge the quality of the loan book.

#### **4. Ratio of Incremental NPAs to Opening Gross/Standard Advances**

The ratio on Incremental NPAs to Opening Gross/Standard Advances would basically reveal the asset quality of standard advances of banks. Higher ratio indicates the aggressive loan philosophy or poor asset quality of banks.

#### **5. Gross/Net NPAs (including NPAs in Investments to total Assets)**

The evaluation of asset quality in India is based on Gross/Net NPAs to Gross/Net advances, which reckons only a part of the balance sheet items. The ratio of Gross/Net NPAs (including NPAs in Investments) to total Assets would reveal the degree of impairment of assets in the balance sheet.

#### **6. Ratio of Net NPAs to Total Equity**

Ratio of Net NPAs to Total Equity indicates the equity cover for NPAs. If the ratio is greater than unity, that particular bank is financing NPAs out of interest paying liabilities. This sort of funding pattern would adversely affect the profitability of banks.

#### **7. Rating-wise details of Standard Advances**

In the context of interest rate deregulation and freedom given to banks to price their assets and liabilities, most of the banks are prescribing spreads (risk premia) over their PLRs. The risk premia are being charged on the basis of inherent quality of borrowers as revealed in their credit ratings. With the objective of improving the return on advances, banks may dilute their appraisal standards and let even low quality customers into the balance sheets. This process leads to 'Adverse Selection' and dilution of portfolio quality. A larger proportion of borrowers in the higher end of spread over PLR would boost the current interest income but could be viewed potentially as risk prone. The rating-wise analysis of standard assets would facilitate to evaluate the portfolio quality. The migration analysis (movement of borrowers from higher to lower ratings – negative migration or lower to higher ratings – positive migration) of borrowers is now accepted as standard tool for evaluation of portfolio quality. The expected and unexpected loan losses are also estimated on the basis of migration analysis.

#### **8. Investments in bonds/debentures**

Bonds/debentures are emerging as direct credit substitutes and most of these instruments are being placed privately without ratings. It is, therefore, suggested that the exposure of banks in this segment may be analysed very closely, as investments in low quality bonds/debentures would alter the risk profile.

#### **9. NPAs in Investments**

With large exposures in bonds/debentures, and mostly through private placement route, there is an imperative need to assess the quality of investments portfolio quality. Thus, the data on NPAs in investments and provisions held against identified losses due to credit risk should be analysed.

#### 10. Large Exposures to NOF

At present, banks are not permitted to lend more than 25%/50% of their NOF to single and group (infrastructure projects upto 60%) borrowers, respectively. However, there is no limit on total exposures in excess of a threshold, say 10% of NOF. In most of the western countries, the sum total of exposures in excess of threshold limit of 10% of NOF has been prescribed to restrict the concentration problem. The total exposure is generally fixed at 600% to 800% of NOF. The ratio of Large Exposures to NOF provides a good measure of concentration risk. The ratio is a better pointer of future asset quality problems.

#### 11. Ratio of off-balance sheet items to total Assets

With the introduction of prudential regulations, banks are increasingly going in for off-balance sheet products and the risk profile of these products, unless proper risk management systems are put in place would mount. When the ratio goes up, specific analysis of the off-balance sheet products such as the composition, compliance with prudential limits, portfolio quality, etc. should be undertaken.

### C. Earnings

#### 12. Operating Profits before and after income on Recapitalisation Bonds

In order to measure the true profitability of banks, analysis of operating profits - before and after interest income on Recapitalisation Bonds where applicable, is suggested. In case the adjustment brings out negative operating profits, it clearly indicates the structural weaknesses of banks in the profitability front. This adjustment is specifically relevant in view of the recommendations of Narasimham Committee on banking sector reforms.

#### 13. Adjusted ROAs & ROE before and after tax

Accounting practices amongst banks were never uniform over the years. This apart, the write-back of provisions held against depreciation in investments has boosted the net profit of some of the banks in 1997-98. Similarly, significant changes/deviations in / from the established accounting practices often boost profits. In order to gain uniformity of various return performance measures, it is suggested that net profits published may be suitably modified and the various performance measures are calculated on the basis of published and adjusted net profit.

#### 14. Return on Risk-Weighted Assets

The ratio of Return on Assets basically focuses only balance sheet items. The disintermediation process has transformed the balance sheet profile and most of the banks are scouting for off-balance sheet items for fee-based income. This process has significantly altered the risk profile of banks. Thus, the measure of Return on Risk Weighted Assets, which captures the off-balance sheet activities of the bank as well reveal the relationship between the risks and returns. In case the ratio has consistently been decreasing, it indicates that the bank has not been adequately compensated for the additional risks assumed. This ratio also recognises the growing role of fee income or the differing expense levels in connection with various lines of business.

#### 15. Equity Multiplier (EM)

A bank's EM compares assets with equity and large values indicate a large amount of debt financing relative to equity. EM thus measures financial leverage and represents both a profit and risk measurement. EM affects a bank's profit because it has a multiplier impact on Return on Assets (ROA) to determine a bank's Return on Equity (ROE). EM is also a risk measure because it reflects how many assets can go into default before a bank becomes insolvent. It is true that the Risk Weighted Capital Adequacy standards prescribes the minimum equity support, but it lacks much of its leverage due to preponderance of its focus on credit risk. The banking system is now exposed a larger extent to market risks and risk weight of 2.5% in respect of investments in Government Securities and other Approved securities as a cover against market risks has not been adequate. Thus, a critical scrutiny of EM helps us to evaluate whether capital support is proportionate to the risks assumed in the balance sheet.

#### 16. Earning Per Share (EPS) /P/E Ratio

The EPS and P/E ratios indicate the ability of the bank to access the capital market and the appetite of the bank's scrip in the market. The capital market looks at these ratios very closely.

#### 17. Net Interest Income (NII) & Net Interest Margin (NIM)

NII and NIM are a summary of measure of a bank's net interest return on income producing assets. These two measures are extremely important in evaluating a bank's ability to manage interest rate risk. The higher amount / ratio shows the financial strength of the bank. Any decline in the amount / ratio may be adduced to large non-performing assets or the bank is not strategically placed to take advantage of the movements in market interest rates.

#### 18. Return on Assets (ROA)

ROA is the financial indicator of the efficiency of banks. A lower ROA signifies poor return on assets or high operating expenses or losses in loans or investment portfolios. The analysis of ROA may be extended to Profit Margin (PM) and Asset Utilisation (AU) Ratios to identify the real reason/s for high/poor ROA. High ROA may be

due to excessive risk appetite or trading positions. Thus, detailed scrutiny of asset quality, ALM mismatches and even accounting practices may be undertaken

#### 19. Risk Adjusted Net Interest Margin (RANIM)

Normally, RANIM is a refinement of NIM which factors into provisions made against loan losses. RANIM represents NII, net of provisions for probable loan losses as a percentage to total earning assets. It may, however, be noted that depreciation in investment portfolio on account of market risks has been significant of late and as such the provisions made against investments which are impaired due to adverse movements in YTM may also be deducted from NII. With this extension, the analysis throws open not only the impact of credit risk but also market risks on the profitability of banks.

#### 20. Total Return on Investments

Total return on investments, inter alia, takes into account the coupon yield, capital gain/(loss) and reinvestment income. This measure gives the actual return on investment unlike the conventional measure of average yield on investments. The total return concept recognises the impact of market interest rate movements on portfolio values.

#### 21. Efficiency (Cost- Income) Ratio/Overhead Efficiency (burden) Ratio

Efficiency (cost - income) ratio and Overhead Efficiency (burden) ratio, which represents operating cost (non-interest expenses) as a percentage of Net Total Income (total income minus interest expenses) and Non-Interest Income as a percentage of Non-Interest Expenses, reveal the cost efficiency and the cross subsidisation of various bank products. Higher the ratios, the lower are the profitability of banks. Ideally, the cost-income ratio should not exceed 60.

#### 22. Profit Margin (PM)

PM measures a bank's ability to control expenses and reduce taxes. The greater the PM, the most efficient is a bank in reducing expenses or taxes or both. Five additional ratios like Interest expense ratio (Interest Expenses to Total Income), Non-interest expenses ratio (Non-Interest Expenses to Total Income), Provision for loan loss ratio (Provision for loan losses to total income), Provision for depreciation in investments ratio (Provision for depreciation in investments to total Income) and Tax ratio (Income tax to total Income) isolates the impact of specific types of expenses and taxes.

#### 23. Asset Utilization (productivity)

The asset productivity depends on the proportion of earning assets to total assets or earning base of banks. The earnings could be augmented through efficient asset allocation. The portfolio changes i.e. investment or loan are not only induced by changes in environment but also the yield differential and changing risk profiles.

#### 24. Break-even Volume of Business per Employee and Net Total Income per Employee

The ratios indicate the staff productivity in banks, which is very important in a competitive environment. A comparison of the ratios among the Peer Group would reveal the relative efficiency and staff productivity of banks.

### **D. Risk Measures**

#### **Liquidity/Interest Rate Risk**

##### 25. Purchased Funds to Total Assets

Purchased funds which include all inter-bank and short-term institutional liabilities and certificate of deposits are basically volatile and are used for funding assets would entail liquidity risk. The higher ratio indicates the magnitude of liquidity risk embedded in the balance sheet.

##### 26. Net Loans to total Assets

Loans, essentially being illiquid, a higher ratio of loans to total assets indicate the illiquidity of the bank

##### 27. Core Deposits to Net Advances

The advance portfolio of banks in India is illiquid and therefore it should be funded out of core deposits. Otherwise, the banks would be facing severe liquidity risk when the market is experiencing liquidity crunch. Lower ratio indicates the potential liquidity problems of banks.

##### 28. Investments in Short-term Assets to Purchased Funds/Total Assets

The investment portfolios of many of the banks are generally long-term while the liabilities are short-term. At the same time, the market for investments is shallow. Thus, the liquidity of the bank could be maintained only by proper control over the maturity profile of investments. The lower the ratio, the higher is the liquidity risk.

##### 29. Mismatches in Cash Flows

The ideal measurement of liquidity in the Indian context is cash flows. RBI has recently issued guidelines for Asset-Liability Management (ALM) framework in banks. The cash flow details may be obtained to evaluate the liquidity profile of banks.

### 30. Gap Analysis

The deregulation of interest rates has exposed the banks to market risk, especially interest rate risk. The monitoring of mismatches in cash flows, repricing dates and currency is going to be the top management/supervisory focus and the measure of gaps in different time buckets is suggested. The gaps would reveal the potential loss/gain in NII/NIM on account of changes in market interest rates. The ratio of gaps to total Equity reveals the magnitude of risk being borne and the ability to absorb the hit on capital.

### **The important ratios/other parameters used in Balance Sheet Analysis**

1. Adjusted CRAR =  $\frac{\text{Total Capital} - \text{Net NPAs}}{\text{Risk Weighted Assets} - \text{Net NPAs}}$
2. Incremental NPAs to opening Gross =  $\frac{\text{New accretion to NPAs advances during the year}}{\text{Gross advances at the beginning of the year}}$
3. Incremental NPAs to opening Gross =  $\frac{\text{New accretion to NPAs Standard Assets during the year}}{\text{Gross standard advances at the beginning of the year}}$
4. Net NPAs to total equity =  $\frac{\text{Net NPAs}}{\text{Total Equity}}$
5. Credit concentration to NOF =  $\frac{\text{Large Exposures in excess of 10\% of NOF}}{\text{NOF}}$
6. Return on Equity =  $\frac{\text{Net Profit}}{\frac{\text{Total Equity at the Beginning of the year} + \text{Total Equity at the end of the year}}{2}}$
7. Return on RWAs =  $\frac{\text{Net Profit}}{\text{RWAs}}$
8. Return on Assets =  $\frac{\text{Net Profit}}{\text{Average Total Assets}}$
9. Equity Multiplier =  $\frac{\text{Total Assets}}{\text{Total Equity}}$
10. Accretion to Equity =  $\frac{\text{Retained Earnings}}{\text{Total Equity at the end of the Previous year}}$
11. Earnings Per Share (EPS) =  $\frac{\text{Net Profit}}{\text{No. of Equity Shares}}$
12. P/E Ratio =  $\frac{\text{Stock price}}{\text{EPS}}$
13. Net Interest Income (NII) =  $\text{Interest Income} - \text{Interest Expended}$
14. Net Interest Margin (NIM) =  $\frac{\text{NII}}{\text{Total Earning Assets}}$
15. Risk Adjusted NIM =  $\frac{\text{NII} - \text{Provision for loan loss and depreciation in investments}}{\text{Total Earning Assets}}$
16. Non Interest Margin =  $\frac{\text{Non Interest Income} - \text{Non Interest Expenses}}{\text{Total Assets}}$
17. Profit Margin =  $\frac{\text{Net Profit}}{\text{Total Income}}$
18. Interest Expense Ratio =  $\frac{\text{Interest Expended}}{\text{Total Income}}$
19. Non Interest Expense Ratio =  $\frac{\text{Non Interest Expenses}}{\text{Total Income}}$
20. Provision for Loan Loss Ratio =  $\frac{\text{Provision for loan loss}}{\text{Total Income}}$
21. Provision for Depreciation in =  $\frac{\text{Provision for Depreciation Investments Ratio in Investments}}{\text{Total Income}}$
22. Tax Ratio =  $\frac{\text{Provision for Tax}}{\text{Total Income}}$
23. Net Total Income =  $\text{Total Income} - \text{Interest Expended}$
24. Efficiency (Cost-Income) Ratio =  $\frac{\text{Non Interest Expenses}}{\text{Net Total Income}}$
25. Overhead Efficiency Ratio =  $\frac{\text{Non Interest Income}}{\text{Non Interest Expenses}}$
26. Break even volume of =  $\frac{\text{Cost per employee}}{\text{business per employee NII/Business}}$
27. Net total Income per employee =  $\frac{\text{Net total income}}{\text{Number of employees}}$
28. Asset Utilization =  $\frac{\text{Total Income}}{\text{Total Assets}}$
29. Purchased funds to Total Assets =  $\frac{\text{Inter bank and short-term institutional borrowings} + \text{Certificate of Deposits}}{\text{Total Assets}}$

30. Mismatches in Cash flows = Mismatch in a bucket / Total outflows in a bucket
31. Mismatches in Repricing = Rate Sensitive Assets (RSAs) - Rate Sensitive Liabilities(RSLs) / Total Equity
32. Total Return on Investments = Coupon income + Capital gain(+) or Capital loss (-)+ Reinvestment income